Claims

1. A permanent magnet electric motor characterized by comprising:

a rotor provided with two stages of permanent magnets in the axial direction on an outer circumferential face of a rotor iron core, and having a shaft shifted by a first stage skew angle θr in electrical angle to decrease a first frequency component of cogging torque in the circumferential direction of said rotor iron core between two stages of said permanent magnets;

a stator iron core of cylindrical shape provided with the stator winding for producing a rotating magnetic field causing said rotor to be rotated; and

a stator dividing said stator iron core into plural blocks in the axial direction, and shifted by a second stage skew angle θs in electrical angle to decrease a second frequency component of said cogging torque in the circumferential direction of said stator iron core.

2. The permanent magnet electric motor according to claim 1, characterized in that assuming that the axial length of said stator iron core is Lc (m), and the theoretical angle of said first stage skew angle θr(°) is an electrical angle θt(°), the following expression is satisfied,

θt = (360°/least common multiple of the number of stator magnetic

poles and the number of rotor magnetic poles)/2 .. (1)

$\theta t < \theta r < (700 \times 10^3 / Lc + \theta t)$ .. (2)

3. The permanent magnet electric motor according to claim 1 or 2, characterized in that said stator has said stator iron core divided into the first, second and third stator blocks in the axial direction, wherein said second stage skew angle θs is provided between said first stator block and said second stator block, and between said second stator block and said third stator block.

4. The permanent magnet electric motor according to any one of claims 1 to 3, characterized in that a clearance Lcg is provided between said first stator block and said second stator block, and between said second stator block and said third stator block, such that the inequality $0 < Lcg < 2.2gm$ holds, where gm is a gap between said stator and said rotor.